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The Rural Development Institute is an independent, non-profit operating foundation which serves to support and disseminate, with very modest private funding, the work of the authors of the present paper and related undertakings, on the issues of poverty, hunger and development in the less-developed countries, with particular attention to the rural sector where the bulk of the population lives. A persisting concern of the authors, who are, respectively, at the University of Washington School of Law in Seattle and at the Woodrow Wilson School at Princeton, and who also act as director and deputy director of the Institute, has been the quality and effectiveness of foreign aid in addressing these issues. The present monograph, **Indonesian Development and U.S. Aid,** reflects several rounds of extended fieldwork by the authors to assess both the overall Indonesian development process and the effectiveness of the bilateral U.S. aid program in addressing the needs of the poor majority in Indonesia's rural sector, as mandated by Congress in the New Directions foreign-aid legislation. This is one of the most extensive of those assessments to date—though it parallels fieldwork by one or both of the authors in a number of the aid-receiving countries, including India, Bangladesh, Pakistan, The Philippines, Egypt, Costa Rica, El Salvador, and the Dominican Republic. This is the third in a series of published monographs on Foreign Aid and Development to be issued by the Rural Development Institute.

The assessment process evolved out of author Prosterman's work with a number of Senators and Congressmen on the "New Directions" foreign-aid legislation, especially his work in drafting the Magnuson-Humphrey-Packwood amendment, adopted in 1975 and now Section 102(b)(4) of the Foreign Assistance Act. This established a series of criteria for the allocation of U.S. aid, and led to requests by legislators on both sides of the aisle that he undertake a regular, wholly-independent evaluation of how well AID was meeting the entire "New Directions" mandate: this periodic evaluation process has now overlapped three administrations, those of Presidents Ford, Carter, and Reagan.

The authors are, respectively, Professor of Law at the University of Washington law school in Seattle, and Doctoral Fellow at the Woodrow Wilson School at Princeton.

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INDONESIAN DEVELOPMENT AND U.S. AID

INTRODUCTION. The sharp decline in world oil prices has led to a recent focus on Indonesia's needs to promote economic growth through macro-level policies aimed at the reduction of overall government spending and borrowing and the promotion of non-oil exports (see, e.g., "Indonesia Faces Bleak Economic Future," in the *Asian Wall Street Journal*, June 9, 1986, p. 1, discussing the World Bank's recent review of the Indonesian economy). These are important and immediate issues, and the present monograph bears on some aspects of their resolution—for example, in suggesting some areas where government spending might be reduced and others where it should indeed be at least modestly increased—but our purpose here is *not* primarily one of engaging the macro-economic policy issues. Rather, we begin with the textual requirement in the U.S. Foreign Assistance Act that American development assistance should have as its primary aim the bringing of tangible benefits to the "poor majority," and examine in some detail the Indonesian aid experience—as complemented by the parallel and replicating measures of the Indonesian government utilizing internal and World Bank resources—as one of the best exemplars of successful support for such grassroots development.

The U.S. economic-assistance program in Indonesia continues to be among the two or three best conceived, best implemented programs administered by the Agency for International Development (AID). The Government of Indonesia has evidenced continued commitment to, and progress in, satisfying the basic human needs of the poor majority, whether measured in terms of resource allocation, improved small-farmer productivity, improved life expectancy or success in family planning. The problems confronting Indonesia, however, remain considerable. Despite family planning success, population pressure (particularly on Java) is severe and continues to increase. Partly as a consequence, landlessness is high and growing, while wage levels for unskilled labor are extremely low. At the same time mortality rates remain the highest among ASEAN countries.

Against this background of effective use of the available AID resources and Indonesia's demonstrated commitment to progress

in the face of significant development problems, *the three-quarters cut, in real dollars, in AID funding to Indonesia—development assistance plus food aid—since FY 1979 and the significant concomitant cuts in AID staffing are clearly premature, and appear contrary to the Congressional mandate embodied in the "New Directions" legislation. Overall AID funding (in real terms) and staffing in Indonesia should be restored to their 1979 levels, by FY 1990 at the latest. Such funding and staffing restorations, used in the same effective fashion as present AID resources, could help lay the groundwork before the end of the century for a new Asian development-success story in Indonesia.* Although Indonesia receives development assistance rather than ESF (Economic Support Funds, which are initially allocated on the basis of political and security considerations, though also serving development goals), the desirability of this restoration is further underlined by the enormous geopolitical importance of the country, which is the world's fifth most populous, and whose thousands of islands extend (north-south) across an area of the Pacific as great as the east-west span of the continental U.S.

The clear implication of this conclusion, moreover, is that it would be tragic if the current preoccupation with "macro-economic" issues were to obscure the fact that there are *some* current programs of fundamental importance to the development process which not only should not be reduced but should, if possible, be augmented.

BACKGROUND

Since 1977, we have assessed the principal elements of U.S. bilateral foreign assistance in terms of ability to meet the Congressionally mandated "New Directions" standards. Our general assessment has been in terms of the aptness of project conception to meet those standards as those projects proposed to be funded are set before Congress each year in the AID Congressional Presentation for the coming fiscal year (see the authors' *The Quality of Foreign Aid*, RDI Monographs on Foreign Aid and Development #1, June 1984; as this indicates, we have consistently found the proposed projects for Indonesia to comprise one of AID's best-conceived country programs).

But, for certain major country programs we have increasingly turned to a more qualitative assessment of the U.S. aid effort as actually in operation, and as viewed in the context of the overall development experience within a given country (see our *Egyptian Development and U.S. Aid - A Six Year Report*, RDI Monographs #2, November 1985). The present paper details our observations on the development effort in Indonesia and the relevance to that effort of the roughly $55-million-a-year U.S. Development Assistance program (in addition, Indonesia receives some $19 million in PL-480 food imports annually), following two rounds of extended in-country fieldwork undertaken in June 1983 and August 1984 and more recent review of the U.S. aid portfolio and the broader economic situation in Indonesia. (Author Prosterman had previously conducted fieldwork on development issues in Indonesia in 1972 and 1976.)

We begin with some remarks on the Indonesian development process and recent changes, then turn to current major issues, and a review of the U.S. aid program, in particular its relevance to that process and those issues. The island of Java, with roughly 60 percent of Indonesia's 1986 population (98-102 million out of 168 million) and the most severe development constraints in terms of population pressure on arable land, landlessness, and a range of health and family-planning issues, provides the context for most of our discussion. In that sense this is largely a Java rather than an all-Indonesia assessment.

A Survey of the Problems

Indonesia, an archipelago of over 13,000 islands stretching across 3,000 miles with a total land base of nearly 741,000 square miles, is home to some 168 million people, exceeded only by China, India, Russia and the U.S. These national figures, however, mask a tremendously skewed distribution and density of population. The island of Java comprises less than 7 percent (just over 51,000 square miles) of Indonesia's land area, about the size of the state of Florida or Wisconsin, yet over 60 percent (98-102 million people) of the Indonesian people live on Java. The intense population pressure on Java's land base—1,920-2,000 persons per square mile—is even more pronounced when compared to the cultivated area. With an area of roughly 15.5 million acres under

cultivation, Java's population density is about 6.5 persons per acre, somewhat less than the comparable figure for Egypt (7.9 persons per acre), but far greater than that for Bangladesh (3.8). (Further, in marked contrast to Egypt's fully irrigated, Nile-alluvia farmland, much of Java's cultivated area is situated in upland areas along volcanic slopes, and only 12 percent of the total cropland is irrigated.)

In recognition of this tremendous population strain on its resources Indonesia has embarked on an ambitious family-planning program with the twenty-year goal of cutting the crude birth rate (CBR) in half, down from the 1971 rate of 44-46 per thousand population to 22 by 1991. Considerable progress towards that goal has already been achieved, with the national birth rate currently in the range of 31-34 per thousand, while Java's rates have declined even further, to the high 20s island-wide and 24-25 for East Java alone. The projections presently available indicate that Indonesia's goal of an overall CBR of 22 per thousand may well be achieved by 1993, a dramatic success by any measure.

Despite some improvements, the still-high mortality rates among Indonesian children, however, suggest caution in accepting predictions of significant further family-planning success. The infant mortality rate (IMR) in Indonesia is presently in the range of 90-110 per thousand live births. This is down considerably from an estimated 140 in 1971, but still the highest amongst the ASEAN countries. (The 1986 rates for the other ASEAN countries are: Malaysia - 30, Philippines - 51, Singapore - 9, and Thailand - 48.) Implicated as the leading causes of these high mortality rates are the mutually reinforcing problems of poor nutrition and inadequate immunization coverage. (Overall, Indonesia has since the early 1970s increased its life exptectancy from 47 years to 55, but the lowest in other ASEAN countries is 62).

Reducing Indonesia's crude birth rate to 22 per thousand population will, given historical experience, require substantial reductions in infant mortality. Except for Colombia, Thailand and the tiny St. Kitts-Nevis and United Arab Emirates (at 28, 28, 29, and 27 respectively), there were in 1986 *no* countries with crude birth rates below 30 per thousand population whose infant-mortality rates are above *40* per thousand live births (the IMR figures

for the three exceptions range from 43 to 53). Indeed, since World War II *no country appears to have reduced its crude birth rate even to 30, let alone to 25 or less, without having at least reduced its infant mortality rate to 60 per thousand live births or less.*

The relationship between infant mortality and family-planning success is two-fold. First, parents who are uncertain of the survival of their children are generally resistant to pressures to limit their number of births, opting instead for "insurance births." For the typical land-poor or landless family in a less-developed country, children represent the only source of old-age economic security. Thus, economic rationalism supports parental decisions that err on the side of too many children in the effort to assure survival of enough future wage earners to provide them such security. Conversely, widespread land-ownership as an alternative form of old-age security can contribute significantly to the decision to have smaller families, especially in combination with the next set of factors described. (Indeed, any mandatory program of family planning or even forceful central government promotion of an ostensibly voluntary program without strong concomitant measures to deal with continued high infant and child mortality, especially as it affects land-poor or landless families, would raise serious moral issues.)

Second, infant-mortality rates are reflective of the general development situation within a country. In settings where a combination of improvements in nutrition, and primary health care, education (particularly for women; along with job-creation and other general improvements in the status of women), and sanitation are occurring, infant mortality rates are certain to decline. And it is these same improvements—together with the further important factor of security on the land—that have repeatedly acted as precursors to successful family-planning efforts. (The improvements just listed may in turn, in many settings, be derived to a large extent from the combination of widespread land ownership and small-farmer support which both generates substantial increases in productivity and assures that the benefits of such increases are widely shared, as well as providing resources for social-overhead expenditures. See our chapter, "Toward an Index of Democratic Development," in Gastil, ed., *Freedom in the World 1982.*)

Even with further major success in family planning culminating in a birth rate of 22 per 1000 population (presumably accompanied by sharp declines in infant and child mortality), Indonesia's population is projected to be in the range of 203-210 million by the year 2000. Without this additional measure of family-planning success projections are for a population of 220 million by 2000. (See Population Reference Bureau, *1986 World Population Data Sheet.*) One begins to get the sense, perhaps, that it is not yet time to substantially reduce U.S. aid.

Of even more immediate concern, however, is the contemporaneous growth in the rural and urban labor force as a consequence of the rapid population growth of earlier years. Based on the mid-1960s population data for Java (68 million) and the then crude birth rate (roughly 45 per thousand population), discounted for deaths and the impact of transmigration in the interim, roughly 2.2 million people on Java reached 18 years of age in 1985. That group was the basis for an additional 1.1 million households and 1.8 million new entrants in Java's labor force. (The latter assuming, consistent with Indonesian research findings, that there is roughly 70 percent labor-force participation by females.) Fully three-quarters of this increment can be expected to be situated in rural areas. Clearly, employment generation, both agricultural and non-agricultural, will continue to be of paramount importance in development strategies for Indonesia.

At the same time, even the existing intense population pressure on land resources, let alone the prospect of a considerable increase in that pressure, has profound implications for policies regarding agricultural production and land tenure.

In addressing the food demands of its growing population, Indonesia has already demonstrated remarkable managerial and technical skill in improving production of its basic staple, rice. In a period of 17 years, rice productivity per acre nearly doubled, up from roughly 0.82 metric tons per acre as recently as 1967 to 1.59 metric tons per acre in 1984. (By way of comparison, India's rice yields are still under 0.90, Bangladesh's are 0.87, and the Philippines' roughly 1.00, although several countries—see below—are still well above Indonesian yields.) The area devoted to rice production increased concurrently from 18.6 million acres to 23.8

million acres. As a consequence, overall production rose 148%, and rice importation has been all but eliminated, while *per capita* rice availability (on a "rough," or unmilled basis, exclusive of imports) has risen from 132 kilograms to 225 kilograms, very impressive accomplishments at a time when some 52 million people were added to Indonesia's population. (Updated to 1985, the preliminary figures are 1.61 tons per acre produced on 24.2 million acres, with *per capita* availability up to 232 kilograms.)

The success of the rice-production effort is ample evidence of Indonesia's capacity to improve small-holder agriculture and should bode well for similar improvements for other, "secondary" crops. To date, however, secondary crops have not witnessed the yield or production increases that characterize the rice sector, primarily because of past inattention at virtually every level: policy, research, resource-allocation, and extension. Total production for grain crops other than rice has kept pace with population increases, but yields are but a fraction of what they might be. For example, Indonesia's recent corn yields, at 0.6-0.7 metric tons per acre, are only half those of Taiwan (currently 1.49 metric tons) or China (currently 1.60 metric tons). (National yield figures for Greece, the world's leader in corn productivity, are presently in excess of 3.9 metric tons per acre.) Similarly, yields for crops such as soybeans and other pulses, as well as various vegetable crops, remain far below world averages.

Complicating Indonesia's current agricultural situation, and all future rural development strategies, is the existence of a significant and growing group of landless agricultural families. ("Landless," as used here, denotes those agricultural families dependent on the land of others for their livelihood, whether they work as hired laborers, tenants, sharecroppers or in some similar arrangement. For our purposes, families that possess a small home garden ("pekarangan" land) but otherwise earn a living working the land of others are considered landless.)

The estimates vary but the most recent village-level studies suggest very broadly that landless families represent 30 to 50 percent of Java's rural population. Survey data collected by the Center for Agro-Economic Research in Bogor suggest 25 percent of rural households are "absolutely landless" (that is, apart from

possible *pekarangan* land, any agricultural income comes from work as hired agricultural laborers), while 13 percent are "pure tenants" (again owning no land, other than possible *pekarangan*; but many of these families probably work part time as agricultural laborers), a further 15 percent are operators of both owned and tenanted land, and 42 percent are full owner-operators (a final 6 percent were owner non-operators, presumably renting land out).

Further, the studies indicate that the proportion of Java's landless families has increased over the past 10 years by more than one-quarter. (Given the sensitivity of the land issue in the 1970s (a consequence of the turmoil of the 1960s induced by the cynical and polarizing policies of the PKI (communist party), which has been virtually destroyed in the bloody aftermath of the 1965 coup attempt) it has been suggested that landlessness was understated in surveys of that period. If true, the increase in landlessness on Java over the past 10 years would be less than one-quarter, although the current overall end-figure (30 to 50 percent of *rural* population) would still hold.)

These landless families now appear to represent as much as 40 percent of Java's *total* population. Experience in this century in other countries with similar degrees of landlessness suggests a strong correlation between such acute landlessness and both poor agricultural performance and a proclivity for massive civil upheaval (indeed, Indonesia has already experienced one episode of dramatic upheaval, the PKI-catalyzed violence of 1965, that focused in considerable part on land-tenure issues). (See, on this, our *Freedom in the World* chapter for Freedom House, cited earlier and, in succinct form, Prosterman & Riedinger, "Land Reform Can Be the Marxist's Worst Enemy," in *The Wall Street Journal*, October 27, 1983. Ten of the world's 12 most productive agricultures (in terms of grain produced per acre) are settings in which small owner-operated farms predominate, while (with the exception of rice in Indonesia) no country with a significant proportion of landless agriculturalists has achieved even modestly high levels of productivity. Further, of the 22 countries in this century in which tenants and agricultural laborers constituted one-quarter or more of the total population, 15 have so far experienced revolution or protracted civil conflict. Increasingly, it has been Marxist ideologues who have channeled and manipulated

peasant grievances in catalyzing these episodes of upheaval—and then betrayed them in both political and agricultural terms, through totalitarianism and collectivization.)

Indonesia is, however, unique in that this degree of landlessness exists side by side with a system of predominantly owner-operated farms. On the best information presently available, roughly 60 percent of the holdings in Java appear to be fully owner-operated and another 20 percent partly owner-operated (these ratios are probably somewhat lower in the rice regions and somewhat higher in the upland areas). (Note that this is consistent with the ratios of types of *holdings*—i.e., excluding laborer families and including only pure tenants, mixed holdings, and pure owners—described above: 13/15/42. Of the three figures, pure owners (42) represent three-fifths or 60 percent, and part-owners (15) represent just over one-fifth or 21 percent.)

Thus, unlike other settings of landlessness which are characterized by extensive tenancy or plantation agriculture, one typically finds the Javanese owner *directly managing and cultivating* the holding. With the motivation of ownership, the farmer is much more likely to make the necessary physical and capital investments to realize the potential of improved seed varieties and other "Green Revolution" technologies. Landlessness, to the extent it exists in Java in the form of laborers working part time on otherwise basically small owner-operated holdings (as distinct, however, from tenancy, and the lands and families which that institution affects), may prove a lesser constraint on productivity improvements than "landlessness" has elsewhere.

However, in terms of its likely impact on the prospect for civil conflict, landlessness in Indonesia is cause for considerable concern. The role of the land-tenure issue in the upheaval of 1965 has already been noted, and is certainly evidence enough of the risks involved in any development strategy that fails to address the needs of the landless. In this connection, attention has often focused on traditional Javanese sharing mechanisms for the rural poor. Traditionally, participation in a share (*bawon*) system of harvesting was open to anyone. In exchange for their labor, participants in the harvest were entitled to a share of the amount they harvested, typically one-sixth. Whatever the buffering effects

of the *bawon* system, *it was not sufficient to forestall the troubles of the early 1960s*, and since then the proportion of landless families has increased.

Further, with the introduction and now near-universal adoption of high-yield variety (HYV) rice, and related technological changes, there has been much concern among researchers and policy-makers about the possible adverse impact of such changes on wage structure, labor demand, and the *bawon* system. While the findings vary depending on the date and locale(s) of the various studies, the consensus seems to be that the net impact of this change has been positive. On Java, real agricultural wages are estimated to have increased some 35 percent over the past 10 years (roughly 2.8 percent per year, compounded), with virtually all of that increase during 1978-1984. (Several studies focusing on earlier periods found, by contrast, both a decline in real agricultural wage levels and labor demand. See, for example, Collier, "Agricultural Evolution in Java," in Gary E. Hansen, *Agricultural and Rural Development in Indonesia* (Boulder, Colorado, 1981).) Outside of Java the increase has been even greater, estimated to be on the order of 6 percent per year. At the same time, and only after some initial labor displacement with the shift to certain labor-saving technologies (for example, the change from the traditional knife-like ani-ani to the larger sickle as the harvest implement) there has been an apparent increase in agricultural labor demand, with a concomitant increase in the average number of work days per laborer.

The *bawon* system meanwhile appears to have undergone a cycle of change and then restoration. In the 1960s the system was, as noted earlier, essentially open to all, with laborers qualifying for a typical one-sixth share in return for their harvest labor. By the mid-1970s, limitations on participation in the harvest emerged in the form of a contract harvest arrangement known as *tebasan* or through requirements of pre-harvest work under the *ceblokan* system. (In the case of *tebasan*, the outside contractor was free of local customary constraints and could limit the number of harvesters employed. Under the *ceblokan* system, at least in its pure form, laborers were required to assist with transplanting or weeding operations to be eligible for harvest labor and the resulting *bawon* share, thus both limiting the number of harvesters and

reducing the real value of each laborer's daily wage—expressed as a harvest share divided by days worked—by increasing the work required to earn that share.) Even where the *bawon* system remained, the laborers' share of the harvest had often declined from one-sixth to one-seventh or one-eighth. Recent evidence, however, suggests a shift back to the more traditional *bawon* arrangement, with laborers entitled again to a one-sixth share for their harvest labor alone.

Recent World Bank findings appear to confirm these improvements and indicate significant progress in alleviating poverty amongst all sectors of the Indonesian population. On Java the estimated incidence of poverty declined from 65 percent to 46 percent from 1970 to 1980. The bulk of the decline occurred from 1978 to 1980, down from 1978 levels of 58 percent. The comparable national figures are 57 percent (1970) and 40 percent (1980). (The Bank's definition of poverty is based on a minimum food expenditure requirement of 17.6 kg. of (milled) rice per month *per capita* which is required to provide 2,150 calories and 30 grams of protein per day. In addition, an allowance is made for non-food basic items such as shelter and clothing, related to the consumption expenditures of households subsisting at the minimum food expenditure level. See World Bank, *Indonesia: Policies and Prospects for Economic Growth and Transformation*, April 1984.)

The best, though still impressionistic, recent evidence would suggest a decline of equal or greater magnitude to that of 1978-1980 has occurred from 1980 to at least 1984, implying that the incidence of poverty as thus defined is now on the order of 35 percent on Java (and perhaps 30 percent nationally). (Rice production, for example, was 19.3 million tons in 1970, 25.8 million in 1978, 29.7 million in 1980, and an estimated 39.0 million in 1985. *Per capita*, this is approximately (in terms of unmilled, or paddy, rice) 158 kg., 178 kg., 196 kg., and 232 kg., respectively.)

Several critically important qualifications must be noted, however, and the various improvements cited must not be mistaken as evidence of Indonesia's having "graduated" from the less-developed ranks or as reason for curtailing U.S. economic and technical assistance. First, the definition of poverty used here is one based on the minimum necessities for physical survival. *That over*

one-third of Java's population cannot meet that basic standard is staggering evidence of how far the development process has yet to go. Further, the disaggregated data show significant urban-rural disparities. In 1980, the World Bank's respective urban and rural percentage figures for the incidence of poverty on Java were 21 and 52. Even with the positive developments since 1980 it is likely that over *40* percent of Java's *rural* population, primarily landless agriculturalists, currently lack the wherewithal to meet their minimum food and other basic needs. Further, our fieldwork, as well as other research, has consistently revealed wage levels so low (typically the equivalent of $0.60-$1.00 per day for agricultural laborers) as to suggest that even many of those families who are otherwise above the "poverty" level as defined by the World Bank can afford only the most marginal of existences. This situation seems confirmed by such basic indicators of human well-being—though both figures have improved significantly from their early-1970s levels—as Indonesia's continuing relatively high infant mortality rate (90-110) and low life expectancy figure (55 years). (By comparison, Bangladesh has an IMR of 128 and a life expectancy of 48, while the figures for China are 50 and 64, respectively. The early-1970s levels for Indonesia were around 140 and 47, roughly the same as Bangladesh today.)

CURRENT PROGRAMS, NEW INITIATIVES

The complex array of problems that still confront Java in particular, and Indonesia more generally, can be addressed by no single or simple solution but will require a multi-faceted development strategy. The various major components which might go into such a strategy provide a useful framework for discussing current and prospective programs. These elements include:

1) Riceland intensification (including improvements in "secondary" crop production)

2) Upland agricultural intensification (including appropriate watershed-management techniques)

3) Home garden intensification

4) Asset endowment for the landless

5) Off-farm employment—industrialization

6) Off-farm employment—small enterprise endowment

7) Family planning and health

8) Transmigration

Riceland Intensification. Indonesia's success in nearly doubling rice productivity to 1.59 metric tons per acre between 1967 and 1984 has already been noted. Contemporaneous rice yields in Taiwan (2.0 tons). China (2.2 tons), Japan (2.6 tons), North and South Korea (2.5 and 2.6 tons, respectively), however, suggest that significant further improvements in Indonesia's rice productivity are possible. Research and extension efforts aimed at achieving such increases should continue as a moderate priority, both to meet the demands of an increasing population and to allow possible future reduction in the area needed for rice production, permitting diversification to other essential crops.

Note too that such increases may relieve some of the pressure on agriculture posed by the loss of farmland to urban sprawl (estimates run as high as losses of one-seventh of the agricultural land in some parts of Java over the past several years). However, these increases should not under any circumstances be taken as a surrogate for the stringently enforced land-use regulations that are needed to stem this critical loss of farmland. Given the already intense pressure on farmland, every effort must be made to preserve it and channel urban growth "upward," or else onto nonarable land.

Beyond rice production, Indonesia is now turning its attention to "secondary" crops such as corn, soybeans and various vegetable crops that can be grown in addition to the basic rice crop.

In Central Java, for example, extension agents are being retrained along the lines of the World Bank's often successful training-and-visit model to communicate improved secondary crop and small livestock practices to small farmers. (The extension agents are trained in a variety of production-improvement techniques and then communicate them during regular weekly visits

to typically small-and-progressive "contact farmers"—*kontak tani*—who in turn disseminate the information to the broader farmer community.) Complementing this educational work is a program of distribution of improved seed packages, fruit tree seedlings and improved goats and sheep to 10-person farmer groups, a portion of which is financed through AID support of the Provincial Development Program (PDP). In all cases—according to the principles of the program, and as we consistently observed—efforts are being made to benefit the poorest farmers, including targeting part of the extension outreach and seed distribution to the home garden plots of the otherwise landless, as well as the distribution of many of the improved goats and sheep. (The maximum holding size for participants in this element of the PDP program is 0.6 acres; most of the participants in fact have much smaller holdings than that, or none.)

To further leverage the program funds, farmers receiving livestock are required to pay the program in kind, typically 2 offspring over a 3-year period. Recipients of the livestock are trained to pen their animals and feed them on a "cut-and-carry" basis (that is, carrying fodder to the animals rather than permitting free grazing) to minimize the risk of environmental damage as well as harm to the animals. This is an example of a production-enhancing technique that works well in an excess-labor setting like Java, but would be unthinkable in a farm economy that was shorter on labor.

(A further form of livestock distribution that has been carried out with enormous success under the auspices of the Small Farmer Production Project in Egypt and could seemingly be introduced as an important component of the Indonesian program involves poultry, particularly layers. Locally made batteries housing less than 100 pullets require little space, yet can provide a significant nutritional and income supplement to the rural poor. As with goats or sheep, such a program is particularly well suited as a means of endowing landless families with productive assets. The Egyptian experience and Indonesia's own experience with certain credit projects indicate that this type of asset-distribution program can be run on a revolving loan basis at market interest rates, with essentially 100 percent repayment. See *Egyptian Development and U.S. Aid — A 6-year Report*, noted above.)

The counterpart PDP effort in East Java includes the introduction of triple cropping pattern (two rice crops and a secondary crop), even in rainfed areas, rather than the previous two-crop pattern (a single rice crop followed by a secondary crop). At the same time, a package of practices has been introduced which results in significant yield increases on individual crops—as much as 40 percent for rice using the same seed as previously. Initiated on demonstration plots, the techniques and results are spreading rapidly.

Also encouraging are the test farm results for recently developed varieties of hybrid corn. A product of the Cargill and Pioneer seed companies, this corn is resistant to downy mildew, the disease which afflicted many earlier varieties of U.S. hybrid corn when introduced into the tropics. Yield results on test farms are on the order of 10-15 tons per acre, while the early results on more typical farm settings average 4-6 tons. Even the latter yields represent a roughly seven- to ten-fold increase over the present national average for corn.

Still, the low national yields for secondary crops cited earlier are evidence of how much remains to be done. (AID has introduced a promising new Secondary Food Crops Development Project planned at $11.4 million.) A thorough revamping of extension, credit, input and marketing services, as well as improved transportation and storage facilities, as they relate to these crops, appears necessary. If one may roughly calculate an eventual need for a revolving production-credit fund equivalent to $40 per acre ($100 per hectare) for non-rice production on one-half the present rice acreage and two-thirds of the non-rice acreage Indonesia-wide, then there would be a potential need for around *$1 billion* in such credit to be allocated out of some combination of internal and foreign-aid resources over the next several years; and if one includes medium-term credit for such purposes as animal husbandry, and upland agricultural improvements discussed in the next subsection, and adds the cost of associated improvements in extension services (but excluding irrigation and rural infrastructure), the funding needs during the 1980s might eventually come to twice this amount.

But some things may be accomplished in the short term and at very little cost. For example, there is at present an acute shortage of rhizobium, the bacterial inoculant used on the soybean to enhance nitrogen fixation. We are told that currently there is only enough rhizobium—produced in a small laboratory at Gadjah Mada University in Yogjakarta—to inoculate the seeds for some 1200 acres in all of East Java, only a minute fraction of the area planted there. (While we have no separate figures for East Java, roughly 2 million acres of soybeans are planted Indonesia-wide, and it is a major food crop.) Largely, it seems, as a consequence, soybean yields among the farmers with whom we spoke were typically 0.16-0.24 metric tons per acre—and nationwide yields average 0.35 tons—compared with a world average of 0.69 tons. It appears that the simple expedient of increasing rhizobium production should result in anywhere from a doubling to a tripling of the yields we saw and, inferentially, in very substantial increases in nationwide yields, thus eliminating the current need to import soybeans for human consumption. While we are hopeful that identification of the rhizobium problem will result in its solution, many of the other problems facing secondary-crop production require more complex responses that in turn demand significant and continued resource and personnel commitments from the Indonesian government and the donor community.

One crop which does currently receive considerable Indonesian government subsidy support but seems deserving of none is sugarcane, generally planted by government fiat on very high-quality lands. As of late 1984, government procurement prices are roughly triple the world market rate. Spread over Indonesia's entire then sugar production of 3.3 billion pounds (it has now increased to 3.9 billion pounds), the differential represented annual outlay of over $300 million more than the acquisition cost of the same quantity of sugar at world prices, or a yearly subsidy of roughly *$500 per acre* for each of the 600,000 acres presently planted in sugar cane. It would seem highly desirable for the Indonesian government to cut cane and sugar procurement prices back to levels consonant with world market levels, and allow domestic production to contract accordingly.

Upland Agricultural Intensification. With growing population pressure on arable land, landless and land-poor farmers have

increasingly turned to Java's uplands as a source of farmland. In response to upland deforestation and the resulting erosion problems on Java (including the silting up of many checkdams and lowland irrigation systems due to soil washed down from upland areas) the government initially began with a narrowly focused "reforestation" or "regreening" program of tree planting. Given the pressures for additional farmland as well as the absence of any individual responsibility or incentive for the protection of the trees planted, the usual outcome of such efforts was a cutting of many of the trees within a few years of planting.

More recently, with support from AID and the World Bank, much broader upland watershed-management programs were begun in the Upper Solo and Citunduy regions of Java. (Similar work under the auspices of Dian Desa, an Indonesian private voluntary organization, is being conducted on the slopes of Mt. Merapi in the Yogjakarta region.) Out of these efforts evolved a farm systems approach to the problems of upland agriculturalists. Combining water management, terrace construction, soil-building practices, improved crop packages appropriate to upland conditions, fodder production on the terrace risers, tree planting, and in some cases distribution of small ruminants, these projects seek to assure upland farmers a satisfactory livelihood while simultaneously promoting adoption of agricultural practices that are consistent with sound watershed management. (Of particular promise in the tree-planting phase is the use of leucaena (*lamtoro*), rapid-growing leguminous trees, which can be used as a source of fodder, mulch, or building materials. Indigenous to the tropics, selected "giant" varieties of the tree are gaining considerable farmer acceptance in the uplands.) In turn, it is expected that lowland farmers will benefit through this combination of efforts from reduced siltation of irrigation works serving them and from increased dry season water availability as the natural discharge from the watersheds is slowed and spread across more months.

As a rule, these efforts have met with marked success in improving both farmer incomes and the upland environment. We are, therefore, extremely pleased to see the creation within the AID mission of a special Uplands office, the initiation of a major Upland Agriculture and Conservation project, and the cooperation of AID and the World Bank in addressing this problem. We

are also encouraged by the mission's commitment to conducting baseline and follow-up research as part of the upland systems project. Of particular importance in measuring the project's impact are data on such social and economic factors as land tenure, landlessness, wage structures and employment. (We are particularly concerned that the project should not result in a significant displacement of tenant farmers as landlords reclaim their improved holdings. Though tenancy in the uplands generally appears to be less significant than in the lowland areas, the project must be advertent to local conditions and the risks of social disruption. Similarly, project personnel must be attentive and imediately responsive to problems encountered on the model or demonstration farms. In one instance during our 1983 fieldwork, soil grubs were devastating an otherwise promising peanut crop, causing considerable disillusionment on the part of the model farmers as to the benefits of project participation.)

In addition to effective extension services and improved crop packages, the project will need to address the availability of adequate credit, as well as small ruminants—and the attendent veterinary and animal-vaccine infrastructure—and ultimately, marketing channels. As to the latter, coordination with efforts such as the AID-supported Aquatic Resources Development Project—which presently envisions improvements in processing and marketing components for shrimp and fish production—could help provide the necessary processing and marketing fcilities for increased uplands production while generating new rural enterprises.

Home Garden Intensification. A great number of Indonesian farmers, *including an estimated 50 percent of the otherwise-landless,* possess home garden plots. Altogether such plots appear to occupy about 10 percent (or about 1.5 million acres) of the estimated 15.5 million acres of cultivated land on Java. Typically on the order of one-fifth to one-tenth of an acre, such garden plots already provide a significant nutritional and income supplement to the family. (For many of the poorer families it appears that a majority of the household's calorie intake is provided through the combination of direct consumption of home garden produce (by itself as much as 40 percent of calorie intake) and the purchase of other foodstuffs with the proceeds of sale of other home garden

produce. See Anne L. Stoler, "Garden Use and Household Economy in Java," in Gary E. Hansen, editor, *Agricultural and Rural Development in Indonesia*, Boulder, Colorado, 1981.) There still appears, however, to be considerable potential for intensification and diversification of the production of such gardens.

Illustrative of what is possible is a home garden of approximately 0.15 acres (6500 square feet) we visited outside of Trenggalek, in East Java. Growing an array of fruits, nuts, spices and vegetables, cyclically throughout the year, a woman was able to provide for the home consumption of these foodstuffs by her 5-person family and still market $255-340 worth of produce annually. By comparison, a well-paid Javanese agricultural laborer, earning $1.00 per day, would have to be fully employed (i.e., 250 days of the year) to earn as much, while a laborer earning only $0.60 per day, a common wage, could expect to receive only $150.

That this woman's accomplishments are presently exceptional is clear, yet widespread replication of a substantial portion of these results should not prove notably difficult. Most of the crop varieties are readily available; indeed a number of them are already grown in traditional home gardens. The foremost element that appears to be lacking is effective extension advice, with some need also for identification and dissemination of crop "micro-packages" suited to specific agro-climatic areas as well as to local nutritional needs. Hence, we strongly support the current home-garden work under the PDP, and would like to see its rapid expansion.

To most effectively realize the potential of home gardens, however, we suggest that AID work with the Indonesian government (and other donors) *to create an independent Home Garden Intensification Project. Under the umbrella of such a project we would visualize both an intensification and diversification of production on existing garden plots and the initiation of a program to endow totally landless families with a garden plot (see below).* Where appropriate, the project should finance training of new extensionists, or the retraining of existing extension agents, to create a cadre of home garden specialists, with back-up by crop and livestock experts. A complementary nutrition-education campaign, in coordination with a similar program presently conducted

under the integrated Family Planning-Mother Child Welfare Program (BKKBN), should be included as well.

We are also indebted to Robert Chambers for the observation that garden plots—as in Kerala state in India, where these parcels average only about 0.05 acres—can be used by the very poor to provide a cushion against unexpected expenses or especially lean times. For example, crops like cassava can be grown on part of the land and stored in the ground against future need. In this way, he notes, "poverty ratchets" forcing the sale of an asset or the incurring of deep debt to a moneylender (with its old man of the sea overtones) can frequently be avoided.

Asset Endowment for the Absolutely Landless. The three preceding sections all assume target groups that already own a small holding or at least a garden plot. But landlessness is widespread and increasing in rural Indonesia, particularly on Java. Today, it appears that roughly 50 percent of Javanese agricultural-laborer and tenant-farmer families do not own even a garden plot. The enhancement of off-farm employment opportunities and other possible approaches (both the subject of discussion below) *cannot alone* provide an adequate livelihood within an acceptable timeframe for all—or probably even most—of these approximately 3 million Javanese families plus the totally landless segment of the 1.1 million new Javanese families estimated to be formed each year. For a large number of these completely landless agricultural families, some means must be found to "endow" them with some agriculturally productive asset. Apart from comprehensive measures of land reform which probably would be not only politically but agronomically unrealistic in the Javanese setting, two possibilities suggest themselves: distribution of home garden plots and water rights endowment. (We include tenant farmers as well as agricultural laborers, when they are without present ownership of at least a garden plot as potential beneficiaries of such measures.)

Distribution of "garden plots" or "home plots" to the absolutely landless would enable them to achieve the same nutritional, security and income enhancements afforded existing owners of home gardens under the intensification project discussed above. Such a program would, in addition, give recipient families a

further stake in the rural society, and a strong new incentive not to move to the cities. What we propose is a program aimed at distributing parcels averaging about 0.15 acres to (as the first priority) families of absolutely landless laborers, and (as the second priority) families with no land other than tenanted land. The holdings from which such parcels are allocated should be widely scattered to permit distribution to laborer (and tenant) families near the areas they are presently living and working in.

To benefit *all* of the roughly 3 million landless Javanese families who do not presently own even a garden plot, with an average distributed plot of 0.15 acres would require distribution of only 450,000 acres, a tiny fraction of Java's farmland. Several sources of land suggest themselves:

- Village salary lands (*tanah bengkok*), which typically encompass 10-15 percent of the farmland area. This comprises roughly 1.5-2.3 million acres Java-wide. This is land *already owned* by the government, which is allocated to village officials (usually to rent out), as a source of income in lieu of payment of a direct salary. Distribution of a portion of this land would necessitate the payment, to a corresponding extent, of a formal government salary to village officials, something already provided for by law as a replacement for *tanah bengkok* needed for other uses in the case of "urban villages"—though thus far infrequently applied. We are advertent to possible concerns that such a salary arrangement might alter the responsiveness of village officials to local desires but believe this can be worked out through administrative arrangements for the fraction of salaries involved. Some up-front "disturbance" compensation to those officials may also be appropriate.
- Village treasury lands (*tanah lungguh*, used to finance village activities), usually 1-5 percent of the farmland.
- Former Dutch plantation lands. These plantation lands involve some 350,000 acres, most of which is inefficiently operated at present by individuals and business enterprises under a 25-to-35-year cultivation right (*hak guna usaha*). Many of these "leases" are due to expire soon, providing an opportunity for the Indonesian government to reexamine the present productivity and use of such lands. We strongly urge consideration of programs to utilize appropriate portions of these lands both for the garden plot project (though their location may limit their

suitability for this purpose) and for distribution of larger-scale parcels (say 1-2 acres) to endow other landless agriculturalists.

- Lands still held in excess of the 12.4-acre (5-hectare) legal limit (lands which apparently comprise an area substantially greater than even that of village salary lands).

Taken together, even the lower estimates suggest that these four categories of land encompass some *25-30 percent* of Java's cultivated area. By comparison, the 450,000 acres required for the suggested Java-wide program of garden-plot distribution constitute only *3 percent* of Java's cultivated total. In short, *a program to distribute a mere one-tenth of the area currently in village salary and treasury lands, former Dutch plantation lands, and holdings over 12.4 acres, would provide a garden plot averaging 0.15 acre to all of the 3 million landless Javanese families who do not presently own such a plot.*

The eventual cost of such a program, even if it were fully subsidized and involved no repayment from the beneficiaries, should be quite modest; significantly less, for example, than the credit needs for non-rice crops referred to above. Since much of the land described is already formally owned by the government, payment in some cases (such as former Dutch land) is likely to be nil, and in other cases to be much less than market value (for example, for village salary lands, perhaps some combination of "disturbance compensation" and salary-substitution payments in lieu of the flow of income from the land, with general revenues picking up the salary payments over time). Thus, if we take the average weighted value of land in Java to be around $3000 per acre—itself a "market" figure reflecting scarcity and cultural factors and not reasonably related to the gross or net income that an acre can be expected to produce—outlays might be on the order of 40 percent of this amount on average, or $1200 per acre, that is, around $540 million for the entire 450,000 acres that would be required for a Java-wide program.

To test this important concept, AID and the Indonesian government might experiment with a very limited pilot project benefiting a total of perhaps 200 families in 5 villages, spread over at least two of the three regions of Java. For this purpose an average of roughly 6 acres would be needed for distribution in each village.

(Although observance of strict equality in each village might not be desired: in one or two villages, for example, the effort might be made to provide *all* completely landless families with a garden plot, while in other settings developing criteria under which only some received a plot; alternatives of free distribution and partially subsidized distribution might also be tested.) The project should also include appropriate technical and input components, with dissemination of a package of seeds, tree seedlings and fertilizer to each beneficiary, accompanied by basic extension advice.

The proposed pilot effort should, of course, be used to provide detailed base-line and follow-up information on the beneficiary families (versus a "control group" of still-landless families in those or nearby villages), their income, nutrition, and other characteristics, as well as to provide an administrative model for possible replication.

In our discussions, considerable interest in such an effort has been expressed by various members of the AID mission, the Indonesian Ministry of Agriculture and the research community. It is the kind of widely replicable, high-impact, high-payoff project (politically and economically) that is precisely congruent with the needs of the Indonesian situation, and we would urge immediate exploration of the elements of and support-requirements for such a pilot effort.

A related project in water asset endowment also commends itself highly. Several members of the mission are familiar with, and were previously involved in, projects of this nature in Bangladesh and India. Simply put, new irrigation programs are designed with the provision that each member of the village—or in some cases just each landless member of the village—receives an equal share of the water. Landless families are then able to "market" their share either for money or the right to cultivate a portion of another's land, or possibly, in a "package" deal in combination with their provision of labor services. Whenever feasible—and this should generally be the case—such a water-to-the-landless component should be included in future AID-supported small-scale irrigation projects.

Further, and to identical effect, consideration should be given to establishing, with AID support, a credit program for construction of tubewells and pump acquisition by groups of landless families. (These would be placed on tiny parcels of donated public land.) For a modest up-front investment such a program would create a recurrent source of income for these families while promoting system maintenance through the incentive of ownership.

Off-Farm Employment—Industrialization. Indonesia's industrial sector continues to make the smallest proportionate contribution to Gross Domestic Product (15%) and total exports (4%) among all ASEAN countries, even though (starting from a low base) it experienced the most rapid real annual growth in that sector—15% a year—among those countries from 1971 to 1982. The manufacturing sector is estimated to employ less than one-tenth of the labor force Indonesia-wide, while on Java the figure is just over 10%. Further, within the manufacturing sector fully four-fifths of the persons employed are engaged in small-scale cottage or household industries (chiefly utilizing family labor), while less than one out of ten works for large industry (enterprises employing more than 100 people). (See the World Bank report, *Wages and Employment in Indonesia*, July 1983, for labor force composition data.)

Notwithstanding some success in channeling industrialization in ways that are relatively labor-intensive, most notably in tobacco processing and textiles, Indonesia's experience to date thus strongly suggests that *major industrial development is unlikely to absorb more than a small fraction of the annual growth in the labor force.* (By at least one account this would hold true even with a 20-percent real annual growth rate in the manufacturing sectors. See H.W. Arndt, "Survey of Recent Developments," *Bulletin of Indonesian Economic Studies*, August 1983, p.22.) Moreover, the experience in Indonesia, as elsewhere, is that such industrial development is typically very expensive per job created. Even a somewhat selective World Bank project contemplates costs of over $10,000 per job created—and unselective "industrialization" undertakings could cost still more (see the 1983 IBRD loan for relending by the Bank Pembangunan Indonesia). By contrast, one AID project, in the area of very small enterprise

support (see the next section) has created employment at an average cost of under $250 per job.

As a consequence, we were particularly encouraged by the Indonesian government's May 1983 decision to "rephase" (cancel or postpone, hopefully the former in most instances) 45 major industrial and heavy infrastructure projects, with a multi-year savings of some $21 billion, including over $10 billion in foreign exchange. This was done under the pressure of a substantial decline in the oil income which is the principal source of government revenue; but, at the same time, levels of government funding in areas such as rural development and *small-scale* enterprise promotion were substantially maintained. Thus, faced with the need to retrench and prioritize, the government made what we believe was a very wise—and, indeed, given the undoubtedly strong bureaucratic interests at stake, also a very courageous—decision. (Even though Indonesia is an "oil-exporting" OPEC country, it should be borne in mind that it is the poorest and most populous of such countries, with the gross value of oil exports even at their height barely equal to $100 per capita.)

Several other complementary policy decisions in the last three years are worth noting. To combat pri ·ate capital flight as well as adjust to reduced oil earnings, Indonesia's currency was devalued 27.6 percent in late March 1983 and the currency thereafter allowed to fluctuate according to market rates (under a "managed float"). This action should enhance the competitiveness of the non-oil export sector in particular. Secondly, a major reform of monetary banking policy was undertaken, including the introduction of market interest rates; this, coupled with a priority review of private-sector regulatory and licensing requirements, should improve allocative efficiency, favoring private-sector and labor-intensive investment (the latter since the use of borrowed capital as a substitute for labor is no longer being heavily subsidized via low interest rates, as it is, paradoxically, under the banking systems of so many capital-short but labor-rich less-developed countries) and helping to mobilize domestic savings. Finally, in a move that other oil-exporting countries, notably Egypt, might do well to emulate, Indonesia has increased domestic energy prices to essentially world market rates, promoting greater

efficiency of domestic energy use (again likely to favor labor-intensive rather than capital-intensive enterprise development).

Despite all of these positive developments, elements of the government and business community remain significantly committed to large-scale industrialization for import substitution. Illustrative of this were an announced goal (decreed as recently as December 1983) of full local manufacture by 1987 for the entire automotive industry; plans to establish a fully integrated steel industry by 1989 (including a cold-rolling steel mill); and the continuing development—apparently unaffected by the "rephasing" decisions—of high-technology industries such as the manufacture of aircraft, railway rolling stock, telecommunications equipment and oil tankers.

Most recently oil-revenue shortfalls have forced a 7% cut in Indonesia's overall 1986/87 budget and a 22% cut in the development budget. The latter cut is not expected to have an immediate impact on actual spending given a backlog of undisbursed Indonesian development funds. Continuation of these cuts (or a loss of the backlog funds under a "spend-it-this-year-or lose-it" policy) could, however, have a serious impact on the development process.

Against this background we strongly support AID's continuing efforts, in terms of both policy dialogue and project financing, to promote approaches which emphasize—in addition to the agricultural sector—the development of small,private-sector enterprises, as a means of generating employment as well as increased production for domestic and export markets. The Indonesian government should be encouraged to use any of the precious foreign-aid resources which are intended for employment-generation *only* for such programs, while any major industrial or infrastructure projects which *are* pursued should be financed exclusively through commercial credit sources. If these latter projects are economically justifiable they should stand up to such market-rate financing. (Cf. Clyde Farnsworth, "U.S. Votes No at World Bank More Often Under Reagan," *New York Times*, Nov. 26, 1984, p. 1—notably where "the bank's scarce resources would be displacing private capital" which could be raised for the project.) In the longer run, it is clear that the larger industrial endeav-

ors can play at most a modest role in the absorption of new labor-force members, and development strategies should be designed accordingly.

Off-Farm Employment—Small Enterprise Endowment. Survey data indicate that roughly one-half of family income in rural Java is derived from non-agricultural endeavors (see, for example, Oleh, et al., "Penguassan Tanah Dan Kelembagaan," Studi Dinamika Pedesaan—Survey Agro Ekonomi, 1983). Clearly, efforts to enhance off-farm opportunities are, and will of necessity remain, an important element of Indonesian development strategy. Given the limited employment-creating potential of large-scale industrialization, it is evident that other approaches to off-farm employment and income generation must be identified and supported. Indeed, a range of such programs are already underway or in prospect.

Particularly important has been the establishment of a series of credit programs specifically targeted at the chiefly non-farm employment and income needs of the poorest rural families. One of the most notable of these credit programs, the *Badan Kredit Kecamatan* (BKK), was initiated by decree of the governor of Central Java in 1972. The mandate of the BKK included a number of unique features. Interest rates were to be set at a level adequate to cover operating costs, including the cost of borrowed capital. Character references from local officials, rather than availability of collateral or detailed analyses of the loan's proposed use, were to be the basis for loan eligibility. Initial loan levels were to be quite small, to minimize risk, with the borrower's credit ceiling increasing with successful repayment of prior loans. The availability of repeat loans, coupled with the program involvement of local officials, was to be the primary incentive for timely repayment by each borrower (with no penalty assessed for late or missed payments). Further, the BKK's operations were largely decentralized. Functioning out of the sub-district (*Kecamatan*) office, teams of bookkeepers and loan officers were to travel on a regular (generally weekly) basis to posts in each village served.

The credit provided in the Central Java program was designed to meet the financial needs of the smallest rural enterprises, primarily small trader activities. As these activities are predomi-

nantly carried on by women, particular attention was paid to their participation in the program. Thus, the typical loan portfolio, with at least 60 percent of the borrowers being female, consists largely of capitalization loans—mostly for equipment and inventory—for activities involving retailing and, where appropriate, simple home preparation of foodstuffs. The commodities dealt with include chickens, eggs, spices, vegetables, rice or soybean cakes, and fermented soybean (*tempe*). Not only do such loans create jobs for the borrower's family, they also are important in effectuating local demand for a range of agricultural products and building a non-oligopsonistic market of multiple independent middlemen as buyers of those products.

Also included are small loans for the purchase of seeds for home-garden (*pekarangan*) cultivation as well as for masonry and carpentry activities.

There was also some early experimentation with seasonal agricultural loans on full-size holdings, but the experience was bad—principally as a consequence of interest rates set, in this one instance, too low to cover the related risks as well as operating and capital costs of the loan program—and the BKK has stopped this type of lending.

Overall, average loan size was initially under $10, and has now risen—as best as can be determined from the available data—to around $20, with a general ceiling of $100 for a single borrower. Interest rates are markedly higher than the one percent per month (or less) applicable to all other government credit programs, with effective BKK loan rates ranging from 5.3 to 6.9 percent per month, depending on the repayment term. (Six types of loans, with repayment terms varying from 22 days to 6 months, are theoretically available. In practice the most typical loans are weekly (*Mingguan*) and monthly (*Bukanan*), repayable in 12 weekly and 3 monthly installments respectively. Nominal interest rates are 3.3 to 4.0 percent per month. However, these rates are applied against the total amount loaned rather than the declining balance, creating considerably higher effective rates.)

Further, all borrowers are required to participate in a mandatory savings program—ranging from 6.5 to 20 percent of the

amount of the loan, and typically around 10 percent—in an effort to mobilize rural capital, increase and diversify the project's capital resources, and familiarize borrowers with commercial banking. In theory these savings accounts earned a monthly interest initially set at 0.5 percent, but even this was generally not paid in the early years of the program. The practice of paying little or no interest on mandatory saving accounts, coupled with the discouragement or prohibition of savings withdrawals, clearly must be corrected if there is to be any realistic prospect of mobilizing rural resources on a *voluntary* basis. Recent steps include increasing the monthly interest rate modestly, to 1.4 percent. A current increase in capital commitments to the BKK should also reduce the pressure to rely on savings so greatly as to restrict withdrawls.

Despite the combination of seemingly high interest rates and the savings requirement, the program's dramatic growth suggests the general appropriateness of the parameters established, both in terms of financial viability of the program and borrower acceptance. As for the latter, research findings in fact indicate that the interest rates associated with informal ("moneylender") credit are often much *higher* than the BKK charges, while the convenience of the BKK—in terms of location, ease of application, and rapid loan availability—makes it preferable to other, lower-interest, government credit programs. Moreover, neither moneylender credit nor other government loans may be available at all for many of the small productive undertakings that BKK finances.

The BKK started in Central Java, with a 1972 loan of roughly $500,000 from the provincial government, to be administered through the Regional Development Bank (BPD). The average loan made was $9. At present the program is operating in all 492 sub-districts of Central Java, with posts in 1765 villages (out of a total of 8500). While there is confusion over some of the data, it appears that as of the end of May 1984 roughly $7.6 million in loans were then outstanding to some 371,000 borrowers, representing an average loan of about $20 (with many borrowers expecting to "roll over" their loans—that is, to repay and borrow again—one or more times during the year).

Repayment experience has been generally good, with delinquencies on recent years' loans well under 10 percent, and appears

to be improving. (As the program does not provide for writing off delinquent loans, cumulative delinquencies represent 14 percent of the value of loans presently outstanding. Were loans 6 months or more overdue—most of which date back to the earliest years of the program—written off as unrecoverable, the current delinquency rate would be roughly 6 percent.)

The program's impact on economic activity and employment has been impressive. A 1982 AID-sponsored survey found that an average loan of $88 (now equivalent to about $53 after the devaluation of the rupiah) both increased the amount of time borrowers devoted to their enterprise and, apart from this greater absorption of their own time, generated 0.3 new full-time and 0.4 new part-time jobs. The survey excluded BKK units in the lowest one of the 5 performance classifications (classifications based on equity, ratio of villages to village posts, portfolio quality, savings, circulation and the number of new borrowers). At that time 33 percent of the units were so classified, suggesting a significant survey bias. In turn this may explain the larger average loan size (by contrast the average loan BKK-wide was shown as $50, now equivalent to about $30 after devaluation), and may bias the findings on employment impact (if, for example, some threshold loan size is required before any increase in employment, at least non-borrower employment, is realized). Even if the part-time jobs were taken as equivalent to only one-tenth of a full-time position, the program is still creating the equivalent of one new full-time job for at most every $220 loaned out; $220, as it happens, is just about equal to the average annual remuneration for substantially full-time labor in rural Java.

More difficult to measure, but also important, is the program's *indirect* impact on village life and employment, whether it is the wife of a landless laborer using a $10 loan to treble her production of sticky rice porridge for school children's lunches or a larger borrower using a $100 loan in the construction or stocking of a new store.

Despite these accomplishments several significant problems with the program emerged over time, prompting financial and technical support from AID and the Government of Indonesia. While this assistance has pointed the way to appropriate solu-

tions, much remains to be done. Low initial capitalization and the need to repay the loaned capital after three years to the Regional Development Bank, coupled with problems of corruption, mismanagement and the poor repayment experience with early agricultural loans caused one-third of all BKK sub-district units to either close or severely curtail operations between 1975 and 1982—given the severe constraints, it is in a sense a testimonial to the program that two-thirds of the units remained fully operational. Beginning in 1979, AID-supported technical and grant-based financial assistance through the Provincial Area Development Project (PDP) went to 65 BKK units, of which 26, or two-fifths, were in the severely ailing category. By 1982, 19 of the 26 had been rehabilitated. While only 7 of 65 PDP-supported units (11%) were thus still in the lowest one of the five performance classifications in 1982, 152 out of 421 (36%) of the BKK units *not* supported by PDP were so classified. This represented an overall ratio of 33% in the lowest classification in 1982, and with the informal spread of PDP procedures to the larger BKK universe, the overall ratio had dropped to 27% by mid-1984 (comparing the *two* lowest of the five classifications, the overall proportions were 58% of all units in 1982, down to 41% by mid-1984).

Partially reflected in the classification data, but also significant in its own right is the ratio of BKK village posts to villages. The 1982 AID survey suggests that *every* village will have to have a post if the program is to provide the effective and convenient service borrowers desire, but presently there is an average of only one post for every five of Central Java's villages (1765 posts and 8500 villages). Even if only the current program target of one post for every two villages is accepted, some 2500 posts must be added. Expansion of village posts will likewise have to be accompanied by significant new capitalization if the credit needs of existing and new borrowers are to be met.

Project personnel with whom we spoke estimated that a five-fold increase in borrowers served is possible and appropriate given existing unmet credit demand. Projections made above from World Bank estimates suggest that the proportion of Central Java's 5.3 million families lacking the wherewithal to meet minimum nutritional and other basic needs is around 35 percent, or 1.86 million families. This likewise would indicate the appropri-

ateness of a roughly five-fold increase over the present 371,000 borrowers.

However, the findings of the AID survey previously cited suggest inferentially that a significant minority of the current BKK borrowers are sufficiently well off economically to be above the World Bank-defined poverty line. That such relatively better off families are interested in loans of the BKK's small size is surprising and disturbing, both in terms of the overall level of credit demand and because of what it says about diversion of these resources away from the poorest families. There are some indications in the parallel KURK credit program in East Java (see below) that where *very* small amounts are initially made available per village (roughly $600, versus average resources for the BKK's 1765 villages in Central Java presently equal to over $4,000) there may be a higher proportion of resources loaned to families above the poverty line. Our impression from the KURK program is that outreach to families below the poverty line increases markedly, at least under the circumstance prevailing in that program, when resources available per village are increased to $1,000. To the extent that some of the borrowers presently served, and to be served under an expanded program, were thus not among the 1.86 million families below the assumed poverty line, the program would have to be expanded proportionately in order to reach substantially all of the families below the poverty line. Based on the available data and our own field interviews we suspect the expansion thus required would be somewhere in the range of 25 to 50 percent.

We may readily calculate the resources that would be needed to finance this expansion, assuming an average loan per new borrower equal to the present average loan of roughly $20—treating this amount as essentially a revolving fund allocated to the particular borrower, to be rolled over for future loans, with any increment in loan size financed out of BKK profits. The *additional* capitalization requirement of an expanded Central Java BKK program serving 1.86 million families instead of the present approximate 371,000, plus an allowance of up to 50 percent for likely inclusion of above-poverty-line families, would thus be a maximum of $45 million. If phased in over a 5-year period, the annual increment to capitalization required would be a maximum of $9 million.

The Central Java BKK program had a head start of seven years or more on the other BKK-type programs which PDP likewise supports, so that proportionately greater numbers of beneficiaries must be reached elsewhere. Expanded to all eight provinces presently served by PDP (including Central, East and West Java), with appropriate adjustments for population differences, such a credit program targeted to the poorest roughly one-third of the population would require up to $165 million, or $33 million annually for 5 years. Even assuming the highest figure of $220 for every full-time job equivalent created, based on the 1982 AID study, such resources could be expected to create at least 750,000 full-time job equivalents, two-thirds of them for the very poorest. (This is, moreover, a conservative calculation, in that it excludes additional time-commitment by the borrowers themselves. Also, it represents just the direct job-creation effect, and excludes indirect, or "linkage," effects.)

To the extent that AID were to supply resources for such an expansion and for associated technical assistance—which we would view as highly desirable, assuming availability of resources—we believe that in all cases assistance should be in the form of a *grant* rather than a "loan" for the establishment of the necessary revolving loan funds and for the associated technical assistance (see further discussion below).

Among similar but smaller credit programs already in operation in the other PDP provinces, a few comments about the Kredit Usaha Rahyat Kecil (KURK) project in East Java are appropriate, given several features unique to it. Begun with PDP support in 1979, the KURK program was operating in 362 villages on the island of Madura as of 1984 (this small island off the city of Surabaya is administratively part of the province of East Java). KURK was, until 1984, administered through the village cooperative system (KUD—*Koperasi Unit Desa*) and supervised at the provincial level by the Central Government's Office on Cooperatives (*Kantor Wilajah Koperasi*). (It is now administered by the Regional Development Bank (BPD) along the lines of Central Java's BKK program.) Unlike the BKK, however, staffing is at the village rather than sub-district level with a village member (or members) serving as loan officer and bookkeeper. Compensation for these village personnel is linked to the loan repayment experi-

ence in their village (presently 4 percent of loan installments collected each month) providing clear incentive for their promotion of timely loan repayment. (Repayments are running about 94 percent.)

Among promising initiatives to promote small-scale industry and off-farm employment is the AID-supported Aquatic Resources Development Project, focused on small-scale fish and shrimp production and marketing. (This project is an outgrowth of the stillborn Central Java Enterprise Development Project which was to focus on increased production and employment in the shrimp industry, as well as light manufacturing for export (rattan and wood projects, ornamental brass and handcrafted garments) and small-scale metal and engineering industries.)

Illustratively, the aquatic resources project is designed to develop and commercialize improved technologies and practices for use by private-sector shrimp hatcheries, *tambaks* (shrimp-raising ponds) and processors. At present, poor coordination and outmoded technology characterize to varying degrees the operations of all three sectors of this industry. Hatcheries typically experience mortality rates for shrimp fry of 80-90 percent by the "PL-4" (four days post larvae) stage. Meanwhile, *tambak* operators either don't stock their ponds with hatchery fry (relying instead on natural "stocking" during periods of tidal intrusion) or understock them because of the fry's cost. Nor are improved fertilizer, to promote algae growth for feed, or pest-control practices widespread. Further, poor pond aeration diminishes yields, while inadequate fresh water supplies during the dry season lead to a suspension of many shrimp *tambak* operations. These various factors combine to result in extremely low average yields of 90-135 pounds per acre per year. Simple, improved *tambak* practices have already been put into practice by at least one operator that lead to more than a six-fold increase: yields of almost 450 pounds per acre per harvest, with two harvests a year, and a third possible. Substantial further yield increases could be obtained with the introduction of other improvements.

Working with an impressive local private voluntary organization, Dian Desa, project personnel have developed locally manufactured prototypes for *tambak* aerators, and hatchery heat

exchangers to control rearing tank temperatures. The latter, for example, have already been shown to improve fry survival rates from the range of 10-20 percent to 40-50 percent (PL-4 stage) and permit much higher fry population densities. (The roughly $1200 investment for the heat exchanger and construction of a ferrocement rearing tank can be recovered from the profits of two 24-day hatching cycles.) Related work on developing supplemental shrimp feed and improving *tambak* water quality is also underway. The last should facilitate greater year-round operation of *tambaks* and, as a consequence, of the supplying hatcheries, enhancing income and employment in both segments of the industry.

Again, two issues bear particular scrutiny as this project, and related employment-generation efforts, unfold: costs per job created and the impact on the poorer segments of Indonesian society. While the BKK's experience in generating a full-time job at an average cost of $220 or less may not be duplicable in these more sophisticated small enterprises, it should be possible to create jobs at a cost of no more than $1000-$1200, which would be the equivalent of a workplace yielding an annual income of $365 and requiring an initial capital investment of roughly 3 times that annual income—in sharp contrast to the $10,000 price tag of the IBRD project for industrial-sector employment, referred to above. *The difference between $1200 and $10,000 per workplace amounts to many billions of dollars annually in the context of an effort to provide employment for even a sizable fraction of the non-agricultural work-force entrants among Java's total of roughly 1.8 million labor-force entrants each year* (and among the substantial additional number elsewhere than Java).

At the same time, attention must be paid to possible displacement of small *tambak* owners and other small-scale enterprise operators as the support packages developed by this project make these enterprises more attractive to larger investors. Stringent efforts to target project benefits to the poorer segments of society are important both for economic and political reasons. On both cost-per-job-created and targeting, we have very serious doubts about the Asian Development Bank's current $50 million project to improve 150 kilometers of freshwater irrigation canals specifically to assist shrimp production on *tambaks*.

Family Planning and Health. Reducing Indonesia's population growth can play a critical role in a longer-term development strategy. Our earlier discussion has already noted Indonesia's important policy decisions and considerable success in this area. Nation-wide, the crude birth rate (CBR) has declined from a 1971 level of 44-46 per thousand population to 31-34 presently, while on Java the rate is apparently in the high 20s and for East Java alone—the most successful province—is 24-25. Our concern, however, relates to Indonesia's ability to achieve further declines in the face of high mortality rates among children, and other adverse socio-economic factors (such as landlessness and female illiteracy), which are likely to be especially severe in their impact on the roughly one-third of Indonesia's population still below the "poverty line." Historical experience elsewhere, as discussed above, strongly suggests the need to substantially reduce infant and child mortality as a precursor—both in its direct significance and as a reflector of other supportive socio-economic changes—to further success in family planning.

Partially addressing this need Indonesia has, among other initiatives, undertaken (with AID support) an integrated family-planning program in East Java, Bali and West Nusa Tenggara. Immunization, oral rehydration therapy (ORT), maternal-child health care (MCH), and income-generation programs complement the contraceptive acceptance effort. Each element of this initiative shows considerable promise, yet important problems remain. (We would hope that vitamin A supplementation would be added to the program after the very recent, remarkable finding—in an Indonesian setting—that twice-yearly mega-doses of this vitamin *can reduce infant and child mortality by one-third.* See, UNICEF, *The State of the World's Children 1986.*)

We reviewed the program in East Java, where the integrated approach is currently underway in 790 villages, or roughly 10 percent of the total. The program's most prominent feature is the holding of a regular (generally monthly) clinic at sub-village integrated health posts to weigh children, conduct educational programs, immunizations and provide family-planning follow-up. As noted earlier the family-planning component has succeeded in reducing the province's crude birth rate to 24-25 per thousand population, based on a major AID-supported longitudinal survey

of 20,000 East Java households. (See Stephen E. Wilson and Arjun L. Adlakha, *The Third Round (1982) of the East Java (Indonesia) Population Survey: A Summary of Results*, Laboratories for Population Statistics, University of North Carolina, February 1984.)

More appears to be needed, however, to get this latest and best data out to the field. Some village officials, based on Ministry of Health projections, are still using a crude birth rate figure of 34. Conversely, estimated acceptance rates were often too high, with acceptances stated to be in excess of two-thirds of the eligible couples. One source of such figures, the draw-down of contraceptive inventory, seems particularly susceptible to error in measuring real acceptance. Other estimates appear to be based on significantly understated figures for the number of eligible couples. The survey estimate of current users in terms of eligible couples (ages 15-44) is 40-45 percent.

This longitudinal survey having been completed, it seems vital that a new survey be undertaken, not only in East Java but in other key provinces. This should include information on the number of eligible couples (which appear to be understated in current official figures), infant and child mortality, acceptance rates (which appear to be overstated in current official figures), as well as the "final output" of child-bearing behavior or CBR. With respect to IMR, it might be noted that there are reasons to doubt even the existing survey infant-mortality rate of 65 per thousand live births for East Java. These include some surprising changes during the three rounds of the survey and reasonably reliable, much-higher estimates for at least the sub-region of Madura. Indonesia-wide the best current estimate of infant mortality appears to be 90-110, although East Java is probably somewhat lower.

Despite the inadequacies of present data, there does appear to be consensus on the relative proportions of present acceptors using given contraceptive methods, figures which, we believe, argue for extreme caution on the part of AID in its current move away from direct support of oral contraceptives. The pill remains the preferred contraceptive method (55 percent of current users), with the IUD a distant second (27 percent) and only one other method of significance (injectible contraceptives, the use of which is apparently growing rapidly, now up to 10 percent of current

users (AID, however, is prohibited from financing injectibles as a contraceptive method since they have not been approved for U.S. domestic use by the FDA).) Since 1978 AID has directly supplied oral contraceptives from the U.S., while assisting an Indonesian effort to become self-sufficient in the local manufacture and procurement of pills. As of year-end 1984 AID terminated the major part of its ongoing support for Indonesia's family-planning program, the $11-13 million a year that has been provided for direct procurement of oral contraceptives. Notwithstanding Indonesia's growing production capacity, and the continuing commitment of the mission and embassy to the family-planning program—including their willingness to step back into this area of support if it appears necessary—we remain concerned that the termination of support is premature. Recognizing that oral contraceptives are a more expensive approach to family planning (in terms of ongoing production and delivery costs) than IUDs, we believe that Indonesia's increasing promotion of IUDs (as well as injectibles) represents a disturbing shift away from the "cafeteria" or free-choice approach, heretofore a touchstone of the program's success, which may in part be economically motivated. The Government of Indonesia, and AID in turn, cannot afford to lose momentum in this crucial program for lack of foreign exchange in the range of $10-15 million per year. The real test is whether the same efforts to "motivate" family planning acceptors to use methods other than the pill would be made, or required, if truly adequate resources were available.

Further success in family planning is also contingent on significant reductions in infant and child mortality. Infectious and parasitic diseases are considered the proximate cause of almost half of these deaths (and for 40 percent of all deaths). Among easily preventable infectious diseases, tetanus and measles figure most prominently. The former is implicated as a primary cause of neonatal mortality, with rates typically in the range of 12-20 deaths per thousand live births, or roughly 60,000-100,000 deaths per year among 0-27-day olds alone. Neonatal tetanus can be completely prevented through immunization programs aimed at women of child-bearing age (immunity passes to children thereafter born for the early months of life), coupled with a longer-term effort to reach school girls and provide boosters to pregnant women. (Neonatal tetanus is also preventable through sanitation

measures via proper delivery practices, but presently over 70% of all births are unattended by health personnel or properly trained midwives.)

Virtually all Indonesian children contract measles, an estimated 4 million or more cases per year. Among healthy, well-nourished children measles rarely create complications, but in the Indonesian setting measles are responsible for an estimated 120,000 or more infant and childhood deaths annually (typically the consequence of a measles-induced course of diarrhea or respiratory infection in combination with inadequate nutrition). Measles also account, indirectly, for a considerable proportion of the 60,000-plus annual cases of childhood blindness (by severely reducing vitamin A stores within the body, leading to blindness from vitamin A deficiency; the possibly much broader implications of subclinical vitamin A deficiency are suggested by the very recent research findings referred to above).

Both tetanus and measles, as well as pertussis (whooping cough), diptheria and tuberculosis, are at least in theory covered by the immunization component of the three-province integrated family-planning program (and other immunization efforts elsewhere), with regular immunization "clinics" in each village. At least in the provinces with the integrated program, much of the related infrastructure appears to be in place—it might be noted that, nationwide, there are 5000 public health clinics and 8000 sub-health centers—including a much-improved "soft" (4° Celsius) cold-chain, introduced with AID support (utilizing kerosene-powered freezers in the sub-district health centers and smaller ice chests and thermoses for transport of vaccines to the villages). Unfortunately, the combination of unpredictability and infrequency of immunization-team visits—stemming from personnel and transportation shortages—leaves many children unreached by the program. (For example, in 1981 less than one-fifth of all infants received DPT—diptheria, pertussis and tetanus—immunizations nationwide.) Even when village visits are made, supply shortages, notably of measles vaccine and the special BCG (tuberculosis) syringe, limit their utility.

With respect to the supply problem, an effective freeze-dried measles vaccine is now available at one-fifth the in-country cost of

the previous vaccine. We hope that the resulting savings will facilitate a dramatic expansion of measles immunization coverage. More broadly, AID personnel estimate that an effective program of *complete* immunization could be run for $3-4 per child served, or roughly $15-20 million for universal coverage of each cohort of infants. Inferentially this would require a further one-time outlay of $60-80 million spread over several years to reach the three quarters of Indonesia's existing 0-4 age group not presently immunized.

(It would be highly desirable if World Bank or Asian Development Bank funding which is in prospect in the "family-planning" or "health" areas could provide substantial support for the oral-contraceptive and immunization needs just discussed. Unfortunately, however, their programs appear heavily skewed towards narrow "bricks and mortar" components (such as health or family-planning clinics) and are unlikely—at least without heavy pressure from the U.S. Congress or the Executive—to meet these much greater needs.)

The single most important proximate cause of childhood mortality, however, is dysentery, diarrhea and related intestinal diseases. AID personnel estimate that each year there are at least 400,000 deaths directly related to diarrheal diseases and at least 60 million cases of diarrheal disease, with young children probably averaging over 4 episodes per year. With roughly 90 percent of the Indonesian population lacking access to safe water, and at least 80 percent lacking even rudimentary sanitation facilities, it is unlikely that the disease organisms can be readily removed from the environment, even in a time frame of several decades. However, significant reductions in diarrheal-disease mortality can certainly be achieved through oral rehydration therapy (ORT) in conjunction with improved nutrition and, in the case of infants, proper breast feeding. Likewise, it now appears that twice-yearly vitamin A mega-doses are a further simple intervention that can have a major impact on this cause of mortality.

Oral rehydration therapy (ORT), using either prepackaged salts or home preparation, is an effective, inexpensive, relatively simple measure to reduce diarrheal-related mortality, by alleviating dehydration, the ultimate cause of death. Experience in sev-

eral countries indicates that ORT can cut diarrhea-specific infant mortality in half. ORT has been available in Indonesia for a decade, yet its use remains relatively limited. For the most part local health professionals have not accepted the "technology," or apply it only in the case of cholera (for which it is very effective), while government health services have not adequately promoted its use, either in terms of the availability of prepackaged salts or in educating women as to the consequences of diarrhea (it is sometimes difficult to remember that even such simple cause-and-effect knowledge is not innate or self-evident, but part of an educational process) and the efficacy of home-prepared or prepackaged ORT.

The family-planning program's prominent inclusion (thus far in portions of East Java and two other provinces) of a creative educational program, both for mothers and for school children, concerning diarrhea and the utility of ORT, thus represents an important new step in the effort to reduce infant and childhood mortality. Some fine tuning of the educational messages may be necessary based on our experience—for example, one skit by school children, incorrectly suggested that some type of shot was needed, in addition to ORT, to successfully combat diarrhea; though inaccurate, the fear of a shot may have more forcefully communicated the broader message to abstain from eating unsanitary food to the children—but the importance of ORT seems generally understood by the mothers. Given the limited supplies of the prepackaged salts, with barely one percent of the need met by the combination of imported and domestic supplies, it will be necessary either to dramatically increase production or to place primary emphasis on instruction in home preparation. Both approaches should be explored, but it would seem that a commitment from either Indonesian government or external resources, of roughly four times AID's $26 million comprehensive program in Egypt (involving both components), or $100 million, should be adequate. (A Vitamin A supplementation program, if introduced, should be considerably cheaper and simpler than even the ORT effort.) To the extent that home preparation of the ORT salts is utilized, at-home instruction should, based on the Egypt experience, be used to ensure that each mother is fully schooled in making early use of the method. In Indonesia's case, increased home-training visits by village-level family-planning *kaders* (volunteer cadres), in combination with trained local midwives seems

likely to be the most effective mode of education. (The increased demand on the *kaders*' time argues for some form of salary, based perhaps on the number of effective home visits, with random visited mothers "tested" for their understanding of ORT at the monthly clinics.)

The other important educational component of the ORT effort is that directed to "selling" it to health professionals. To begin to address this need as well as the need for improvements in home training, disease surveillance and coordination of government program responses, AID is amending its Health Training Research and Development Project.

Evident in much of the previous discussion is the synergistic relationship between morbidity and malnutrition. The integrated family-planning program seeks to address malnutrition through regular growth monitoring, nutritional education and credit for income generation. The main focus of the monthly village clinics is growth monitoring, with each child weighed and that weight recorded on standard weight-for-age growth charts (adjusted for Indonesian children). Mothers and attending health personnel can thereby identify nutritional problems. Attendance at these weighings is relatively good, perhaps 50 percent of the children in villages served overall, with near-universal coverage in some villages. The weighing results, however, are quite disturbing. In any given month it appears that 40-70 percent of those weighed show a loss relative to the growth standards, suggesting significant nutritional problems even at a time (1983-84) of relative economic prosperity in Indonesia. (This does not mean that 40-70 percent lose weight in absolute terms, but that they gain less than the standard says they should between the previous and present age of weighing, usually set at monthly intervals.) Thus, a significant minority or actual majority of children in most villages served by the program show a decline relative to the "normal" range of the chart, as they progress through their first year and into their second year of life. (The growth charts are a potential gold mine for action-oriented research, but little or nothing appears to have been done thus far to review the results. We recommend that AID, Ford Foundation or other research funding be obtained to examine both adequacy of the information being collected and

such questions as whether there are seasonal patterns to declines relative to the standard or sex- or sub-region-related differences.)

Theoretically, badly off children are to be referred to a sub-district level clinic for special feeding. Also, sample diets of locally grown foodstuffs are demonstrated at the monthly clinics as part of the effort to educate mothers about proper weaning foods and balanced diets for their families. A soybean-based drink is also given out to attending children as a nutrition supplement (among attending mothers the demand for the drink appears universal).

However, none of these interventions seems likely to have a major impact on improving nutritional status. The referral program appears to exist mostly in theory, and programs where mothers must travel substantial distances to seek nutritional aid are generally impractical in any event. Education about desirable foods is (as local *kaders* pointed out to us) unlikely to improve nutrition where families lack land to grow those foods or income to buy them. Finally, a once-a-month supplemental beverage is clearly inadequate to the need.

To address these limitations, the integrated program has begun to promote home-garden intensification and, through a small credit program, income generation. The former effort appears to be of still-modest scope but could serve as one vehicle (for those who have *pekarangan* land, or who might receive it under a garden-plot distribution program) for the broader intensification program described earlier. The income-generation project operates only in a few villages. It is designed somewhat like the BKK program, with loans made for small trading activities, except here the average loan is under $2. Significant additional capitalization is necessary if the credit demand in the villages presently served, let alone those not yet served, is to be met. Such a program might complement the efforts of BKK-type credit programs, and perhaps serve as a conduit for some portion of the expanded non-agricultural credit resources recommended above.

Another method of addressing malnutrition among children is suggested by the work of a Dutch-supported nutrition survey project on Madura. This would involve development of a nutritious supplement based on local foodstuffs that was then

"marketed" (distribution to targeted groups might be partially or fully subsidized) as a *jamu* (that is, like a traditional herbal medicine) specifically for weaning infants and for young children. As *jamu* are traditionally age and condition specific, it should thus be possible to ensure that such a nutrition supplement would go to the target child rather than becoming an addition to the family's general food intake.

Illustratively, if it were determined that the target group were the worst-off one-third, in terms of the growth charts, of Indonesian children 6 to 24 months, and that the principal need for supplementation came during a four-month period at the end of the dry season and early part of the rainy season, then the annual cost (apart from administrative costs) of a 20-cent-a-day food supplement—equal to 2.3 million children times 120 days times 20 cents—would be somewhat under $60 million. (If the supplement were largely soybean based, such a program might be phased in as a complement to a program to increase Indonesian soybean production such as is discussed above.) Again, however, it should be emphasized that based on the most recent findings the single most important nutrition supplement may be vitamin A, the cost of which—apart from administration—would apparently be *less than $1 million* per year.

Transmigration. Beginning in 1905 under the Dutch, Indonesia has attempted to relieve some of the population pressure on Java (and Bali) through resettlement on other islands. While transmigration continues to occupy an important role—though less prominent than a few years ago, especially with a recent cut in World Bank funding for the program—in Indonesian development strategy, its potential contribution is both marginal and expensive. Even the expanded transmigration program during 1979-81 resettled fewer than 60,000 families each year, less than *6 percent* of the new households formed annually on Java. Moreover, our impression is that many of these families did not stay "resettled," but returned to Java.

Problems with land clearing, marginal soils in resettlement areas, the long production lead time for perennial crops that must often be grown as a consequence of marginal soils, and the need to develop marketing channels and basic infrastructure have made

transmigration an increasingly expensive program. A 1979 World Bank project predicted costs of nearly $5000 per family benefited. More recent experience suggests a range from $10,000 up to as much as $15,000 per family resettled. At these costs a transmigration program designed to resettle even a quarter of Java's new households each year would require roughly $2.5-3.75 billion annually. While some transmigration may be justified for internal Indonesian government financing from a non-development point of view, *it is clear from a development standpoint that this program is neither cost effective nor remotely likely to have a significant impact on Java's poor.* It thus joins major industrial projects as an area where foreign-assistance resources, whether bilateral or multilateral, should most emphatically *not* be used.

RESOURCE NEEDS: A SUMMARY

Before turning to the U.S. aid program specifically, it might be useful to recapitulate the scope of the various program and resource needs that we have been able to identify in the preceding discussion:

Agricultural production credit needs for nation-wide implementation of non-rice crop improvement programs might run around $1 billion (although significant components, like rhizobium production for soybeans, may cost only very modest amounts). Medium-term credit needs in agriculture (exclusive of irrigation and rural infrastructure), including support for animal husbandry and costs of replication of successful upland-improvement packages Java-wide and in other critical upland areas, plus extension service improvements, might cost roughly the same. An area where technical assistance may be highly leveraged is land-use planning and regulation to protect agricultural lands from takeovers for other purposes.

Input, extension, and associated costs for home garden intensification can be considered subsumed under the above, involving the fractional proportion of land presently in home gardens, plus an additional fraction—perhaps equal to 3 percent of the cultivated land on Java—that might be redistributed in a comprehensive program to "endow" totally landless agricultural families with a garden plot. The further costs of such a redistribution of garden-

plot holdings (given the categories from which the land would be drawn) might be on the order of half-a-billion dollars. A limited pilot project for such garden-plot distribution could be carried out for a fraction of $1 million.

Expansion of non-agricultural credit on the PDP-BKK model to meet fully the needs of the poorest one-third of the population of all 8 provinces presently served by the PDP (including Central, East and West Java, with their majority of the nation's total population) would require up to $165 million. Nation-wide expansion might raise this figure close to $300 million. Other models of support for non-agricultural enterprises of the type once considered under the Central Java Enterprise Development Project might eventually absorb funding of somewhat larger magnitude.

In the family-planning area, it seems entirely possible that sustained funding for oral contraceptives at a level around $11-13 million, or perhaps as much as a total of $65 million over the next five years, would be desirable. In the health area, universal immunization of each cohort of infants should cost around $15-20 million, while reaching young children not yet immunized might require a one-time effort costing $60-80 million. A 5-year outlay of as much as $180 million might therefore be required. An effective oral rehydration (ORT) program might be expected to cost around $100 million, and on a plausible set of assumptions, reaching the nutritionally worst-off children with supplemental food (a complement to programs of home garden intensification and micro-credit for income generation) might involve a targeted program costing around $60 million a year, or $300 million over 5 years. Vitamin A supplementation over 5 years would probably cost less than $5 million.

In addition, there are specific action-orientated research needs in areas such as land tenure, demographic indicators, growth patterns of children, and others, which need to be addressed, and for which associated costs are very small.

Altogether, apart from the associated administrative and technical assistance needs, one might identify a core package of measures crucial to Indonesia's development whose multi-year cost should be around $4 billion—and for which large-scale proving

and the initiation of full-scale implementation should be possible for perhaps $1 billion of pinpointed outlays.

Beyond the costs indicated, administrative and technical assistance outlays—the former largely borne out of existing Indonesian government programs and through existing personnel—might add between 10% and 20% to the cost of some of the specific programs (though these would be largely borne by beneficiaries in others, such as agricultural credit and BKK).

THE U.S. AID PROGRAM

As we have indicated, a number of the foregoing high-priority areas are already the subject of ongoing projects within the AID program. Indeed, in some cases Government of Indonesia, World Bank, or other resources are being used for larger projects on which AID has helped point the way. Overall, our judgment over a period of years has been that the U.S. development assistance program in Indonesia has been one of the most effective U.S. aid programs anywhere in the world. (See, for example, Prosterman and Riedinger, *The Quality of Foreign Aid*, RDI Monographs, #1, June 1984.)

But given the clear need for program development, replication, and resource allocation in a number of high-priority areas, and the excellence and high leverage of the U.S. aid program in Indonesia, it is extremely disappointing that the *real value* of U.S. Official Development Assistance to Indonesia has declined by nearly three-quarters (and even the nominal value by 61%) between FY 1979 and 1987. In the earlier year, U.S. development assistance plus PL-480 to Indonesia came to $191.2 million (a figure equal to roughly $280 million in 1985 dollars), while in FY 1987 the figure will decline to an anticipated $74 million. (In the earlier year, the program was divided about equally between development-assistance project aid and PL 480, while currently it is about three-quarters development assistance. Even the real value of development assistance, considered by itself, however, has declined by fully 60% during the period.) Simultaneously, direct hire AID staff in the Indonesia mission have declined from a high of 67 to 45 in 1987.

These reductions in the resources and capacity of the U.S. aid program in Indonesia appear both grossly premature and contrary to the Congressional mandate embodied in the "New Directions" aid legislation. Indonesia continues to be a very poor country despite its oil revenues, with GNP per capital still only $560; next to India, it is the most populous of the less-developed nations, and contains the world's second-largest concentration of very poor people within its borders; nonetheless, it has generally ordered its spending and development priorities quite well in recent years, and in the face of severe obstacles has achieved remarkable improvement in areas such as rice production and family planning; many of the achievements have been catalyzed or aided with AID support, with both AID resources for partial or demonstration programs and AID technical assistance often playing a crucial role; beyond all this, the country is, geopolitically, among the most important of all the less-developed countries. *Given this combination of factors, the sharp reduction in U.S. aid and in direct hire staff can only be regarded as aberrant.* Indeed, from a variety of sources with whom we spoke in Indonesia it is clear that the U.S. aid program—which is now down around the level of the Dutch aid program to Indonesia—has dropped close to the threshold where it will be taken by many as suggesting that *we* don't take Indonesia seriously, and that we can't expect *them* (the Indonesian government or large donors like the IBRD) to take our aid program, or the ideas or initiatives which it represents, seriously either.

Our most basic recommendation is that the level of AID funding and staffing for Indonesia be restored to the earlier levels (in the case of funding, to the *real* level of 1979). This would mean assistance levels up from the current roughly $75 million to $300 million—with the vast bulk of the increase going to development assistance rather than PL-480—and an increase in direct hire personnel of roughly 20 above the recent level of 45, with special emphasis on needed skills. Such a shift might not come from one year to the next, but surely could be phased in over a two- or three-year period, by FY 1990 at the latest. (Even to restore the development assistance portion of the program to its own earlier value, without compensating for the decrease in PL-480, would require an increase to around $140 million, or roughly two and one-half times the present level.)

Among other adjustments that we would urge would be an increase in the grant-versus-loan proportion of the program, with all of the vitally important *technical assistance* in particular to be provided on a grant basis. The nature of concessional "loan" funds is such that they are, from an economic point of view, 80-90% grant in any case, but they do not give 80-90% of the program *flexibility* that grant monies do; they are, in that sense, partly self-defeating.

Even resources at the levels just suggested should not be regarded as setting the limit to the U.S. commitment, if programs of the kind outlined in the previous section are pursued strongly by the Indonesian government. We believe the "window of time" exists in the late 1980s and early 1990s for the application of resources and technical assistance within a context of recipient-country commitment that would permit Indonesia to become by the end of the century a new Asian development-success story—a setting where judiciously applied aid could carry through enough crucial programs to completion so that self-sufficiency and genuine self-sustaining development were achieved, and no more economic aid was required. Here a time-bound opportunity in Indonesia for precisely such an achievement exists: If it is realized it is quite likely to be reflected, 10 years from now, by an infant mortality rate under 50 per thousand live births, a crude birth rate under 25 per thousand population, a near-doubling of overall levels of agricultural production, and in a plethora of other grass-roots improvements, as well as by prospects for assured, very long-term political stability. But, it is an opportunity that is far less likely to be realized in the absence of strong, sustained support over that period from an adequate U.S. aid program.